

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for applying an aqueous coating on a metal substrate, comprising the steps of:

retrieving a metal substrate with a grasping element of an articulative electromechanical device;

immersing said substrate utilizing said electromechanical device in a first aqueous autodepositing composition for a predetermined period of time and forming a first film on a surface of said substrate;

removing said substrate from the first aqueous autodepositing composition, said removed substrate being wet; and

articulating said wet substrate through an arcing, rotating, or pivoting motion after removal from said first composition for a predetermined period of time with said electromechanical device to provide a uniform coating thickness.

2. (Previously Presented) A method according to claim 1, wherein said first film upon drying has a dry film thickness of 2.5 to 25.4 micrometers.

3. (Original) A method according to claim 2, wherein said contact with said first composition is from 1 to 180 seconds.

4. (Previously Presented) A method according to claim 1, including articulating said metal substrate while it is immersed in said first aqueous autodepositing composition.

5. (Previously Presented) A method according to claims 4, further comprising the step of drying said substrate in a drying device after said first wet autodeposited film has been formed.

6. (Previously Presented) A method according to claim 1, further comprising the steps of immersing said substrate in a second aqueous autodepositing composition for a predetermined period of time to form a second film on said substrate, and articulating said substrate either immersed in said second aqueous composition, or after removal from said second composition, or a combination thereof, for a predetermined period of time with said electromechanical device to provide a uniform coating thickness.

7. (Previously Presented) A method according to claim 6, wherein upon drying said second film has a dry film thickness of 2.5 to 25.4 micrometers.

8. (Previously Presented) A method according to claim 6, wherein said first autodepositing composition is an aqueous metal treatment, or an aqueous adhesive composition, and wherein said second autodepositing composition is an aqueous primer composition or an aqueous adhesive overcoat composition.

9. (Previously Presented) A method according to claim 8, wherein said first aqueous composition comprises a) an aqueous metal treatment comprising an acid, and a dispersion of a phenolic resin, or b) an aqueous adhesive composition comprising a flexibilizer, and an acid.

10. (Previously Presented) A method according to claim 9, wherein said second composition is a) an aqueous primer comprising a phenolic resin dispersion and a flexibilizer, or b) an aqueous adhesive overcoat composition comprising a flexibilizer, and phenolic resin dispersion and a crosslinker.

11. (Previously Presented) A method according to claim 10, wherein substrate is dried in a drying device after coating with each said first and second aqueous compositions, wherein said drying utilizes infra-red radiation, radio frequency energy, convection currents, air currents, heated zones, forced air, or induction, or a combination thereof.

12. (Previously Presented) A method according to claim 3, wherein said electromechanical device comprises a microprocessor which operatively controls a robot arm.

13. (Original) A method according to claim 12, wherein said immersion ranges from 3 to 60 seconds.

14. (Cancelled)

15. (Previously Presented) A method according to claim 5, wherein said electromechanical device comprises a robot arm, and where said grasping element is a grasping means, pin, hook, hanger, expandable means, compression grip, insertion grip, suction means, or a magnet, or a combination thereof, wherein said substrate displaces at least 0.25% of a volume of the first autodepositing composition in a tank, and wherein said first composition has a bath turnover of about 1 hour to about 5 days.

16. (Previously Presented) A method according to claim 11, wherein said electromechanical device comprises a robot arm, and where said grasping element is a grasping means, pin, hook, hanger, expandable means, compression grip, insertion grip, suction means, or a magnet, or a combination thereof, wherein said substrate displaces at least 0.25% of a volume of the first autodepositing composition in a tank, and wherein said first composition has a bath turnover of about 1 hour to about 5 days.

17. (Previously Presented) A method according to claim 5, further including the step of cleaning the substrate utilizing a cleaning device, and wherein said cleaning device comprises mechanical cleaning, or chemical cleaning, or a combination thereof.

18. (Previously Presented) A method according to claim 11, further including the step of cleaning the substrate utilizing a cleaning device, and wherein said cleaning device comprises mechanical cleaning, or chemical cleaning, or a combination thereof.

19. (Currently Amended) A method for coating a metal substrate, comprising the steps of:

retrieving a metal-based substrate with a grasping element of an electromechanical device;

bringing said substrate utilizing said electromechanical device into contact with a first autodepositing composition for a predetermined period of time and forming a first film on a surface of said substrate;

removing said substrate from said first autodepositing composition, said removed substrate being wet;

articulating said wet substrate after removal from contact with said first composition through an arcing, rotating, or pivoting motion for a predetermined period of time with said electromechanical device to provide a uniform coating thickness;

bringing said coated substrate into contact with a second autodepositing composition for a predetermined period of time and forming a second film on said substrate;

removing said substrate from said second autodepositing composition, said removed substrate being wet; and

articulating said wet substrate through an arcing, rotating, or pivoting motion either after removal from contact with said second aqueous composition, for a predetermined period of time with said electromechanical device to provide a uniform coating thereon.

20. (Previously Presented) A method according to claim 19, wherein said first and second films, independently, upon drying have a dry film thickness of 2.5 to 25.4 micrometers.

21. (Previously Presented) A method according to claim 20, wherein said contact with said first and second films compositions, independently, is from 1 to 180 seconds.

22. (Previously Presented) A method according to claim 19, including articulating said metal substrate while it is in contact with said first autodepositing composition and including articulating said metal substrate while it is in contact with said second autodepositing composition.

23. (Previously Presented) A method according to claim 22, further comprising the steps of drying said substrate in a drying device after said first wet autodeposited film has been formed, and drying said substrate in a drying device after said second wet autodeposited film has been formed.

24. (Original) A method according to claim 22, wherein said first autodepositing composition is an aqueous metal treatment, or an aqueous adhesive composition, and wherein said second autodepositing composition is an aqueous primer composition or an aqueous adhesive overcoat composition.

25. (Previously Presented) A method according to claim 24, wherein said first aqueous composition comprises a) an aqueous metal treatment comprising an acid, and a phenolic resin, or b) an aqueous adhesive composition comprising a flexibilizer, and an acid, and wherein said second aqueous composition is a) an aqueous primer comprising a phenolic resin and a flexibilizer, or b) an aqueous adhesive overcoat composition comprising a flexibilizer, and phenolic resin and a crosslinker.

26. (Previously Presented) A method according to claim 23, wherein each said drying step, independently, utilizes infra-red radiation, radio frequency energy, convection currents, air currents, heated zones, forced air, or induction, or a combination thereof, and wherein each said contact step comprises immersion.

27. (Previously Presented) A method according to claim 25, wherein each said contact step comprises immersion, and wherein said electromechanical device comprises a microprocessor which operatively controls a robot arm.

28. (Previously Presented) A method according to claim 27, wherein said articulation of said substrate while it is in contact with said first autodepositing composition and while it is in contact with said second autodepositing composition includes removal of entrapped air.

29. (Cancelled).

30. (Previously Presented) A method according to claim 22, wherein said electromechanical device comprises a robot arm, and where said grasping element is a grasping means, pin, hook, hanger, expandable means, compression grip, insertion grip, suction means, or magnet, or a combination thereof, wherein said substrate displaces at least 0.25% of a volume of the first autodepositing composition in a tank, and wherein said first composition has a bath turnover of about 1 hour to about 5 days.

31. (Previously Presented) A method according to claim 26, wherein said electromechanical device comprises a robot arm, and where said grasping element is a grasping means, pin, hook, hanger, expandable means, compression grip, insertion grip, suction means, or magnet, or a combination thereof, wherein said substrate displaces at least 0.25% of a volume of the first autodepositing composition in a tank, and wherein said first composition has a bath turnover of about 1 hour to about 5 days.

32. (Previously Presented) A method according to claim 22, further including the step of cleaning the substrate utilizing a cleaning device, and wherein said

cleaning device comprises mechanical cleaning, or chemical cleaning, or a combination thereof.

33. (Previously Presented) A method according to claim 27, further including the step of cleaning the substrate utilizing a cleaning device, and wherein said cleaning device comprises mechanical cleaning, or chemical cleaning, or a combination thereof.

34. (Currently Amended) A method for applying an aqueous coating on a metal substrate, comprising the steps of:

retrieving a metal substrate with a grasping element of an articulative electromechanical device;

bringing said substrate utilizing said electromechanical device into contact with a first aqueous autodepositing composition by immersing therein for a predetermined period of time and forming a first film on a surface of said substrate;

articulating said substrate through an arcing, rotating, or pivoting motion while immersed in said first aqueous composition, or after removal from contact, or articulating through an arcing, rotating, or pivoting motion while immersed and after removal from contact with said first aqueous composition, wherein after removal said substrate is wet, said articulation through an arcing, rotating, or pivoting motion after removal applied for a predetermined period of time with said electromechanical device to provide a uniform coating thickness, and

wherein said substrate displaces at least 0.25% of a volume of the first autodepositing composition in a tank, and wherein said first composition has a bath turnover of about 1 hour to about 5 days.